

# Study of Au, Ni-(n)ZnSe Thin Film Schottky Barrier Junctions

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**Abstract** Schottky barrier junctions of Al-doped n-type Zinc selenide (ZnSe) thin films of doping concentrations up to  $9.7 \times 10^{14} \text{cm}^{-3}$  have been fabricated with Au and Ni electrodes on glass substrates by sequential thermal evaporation. All of the junctions of different doping concentrations exhibited rectifying current-voltage characteristics with a non-saturating reverse current. From the current-voltage characteristics, the different junction parameters such as ideality factor, saturation current density, series resistance, etc., were measured. Both types of junctions were found to possess a high ideality factor and a high series resistance. The barrier heights of the junctions were measured from Richardson plots and found to be around 0.8 eV. The structures were found to exhibit a poor photovoltaic effect with a fill factor not greater than 0.4. The diode quality as well as the photovoltaic performance of the diodes were improved following a short heat treatment in vacuum.

**Keywords** Diode ideality factor · Schottky barrier · Thermal evaporation · Zinc selenide

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